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Southwestern
Forest Insect & Disease Bulletin

SOUTHWESTERN REGION
U.S. DEPARTMENT OF AGRICULTURE
FOREST SERVICE

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FOREST INSECT AND DISEASE CONDITIONS - 1973

By Robert E. Acciavatti and Melvyn J. Weiss
Division of Timber Management
Albuquerque, N. Mex.

Conditions in Brief

Bark beetles remained the greatest insect problem in the ponderosa pine, Douglas-fir, and Engelmann spruce forests throughout the Region during 1973. Defoliating insects continued to be active in mixed conifer and aspen stands.

Douglas-fir beetle caused tree mortality at Grand Canyon National Park and at other scattered locations in Arizona. The spruce beetle declined to an endemic level throughout the Region. A roundheaded pine beetle epidemic persisted on the Lincoln National Forest and Mescalero-Apache Indian Reservation in south central New Mexico. Mountain pine beetle activity increased significantly on the Kaibab National Forest in northern Arizona and the Carson National Forest in northern New Mexico.

Defoliating insects were abundant in many areas. The large aspen tortrix caused defoliation on National Forest and Park Service lands on the Kaibab Plateau in northern Arizona. The western spruce budworm increased in the mixed conifer forests of northern Arizona and northern New Mexico. At all other locations in the Region, budworm populations were low. An outbreak of western tent caterpillar continued in the Carson National Forest in northern New Mexico. White-fir needle miner defoliation caused top-kill and tree mortality on the Apache National Forest, near Alpine, Ariz. The Douglas-fir tussock moth continued to damage ornamental blue spruce and white fir in Los Alamos and Santa Fe, N. Mex. Southwestern pine tip moth remained a problem in ponderosa pine plantations in central Arizona. Needle miners damaged ponderosa pine in central Arizona and pinyon pine in northern New Mexico.

The most important disease agents in 1973 were the dwarf mistletoes. These parasites continued to cause serious growth and mortality losses. The first large-scale survey of western spruce dwarf mistletoe was carried out on the Fort Apache Indian Reservation, Ariz. An economic study of dwarf mistletoe control practices in the Southwest is in progress. Other disease problems in 1973 included air pollution and aspen cankers. A Regional survey of forests for air pollution injury continued. Symptoms of sulfur dioxide injury were observed at two locations in Arizona. Aspen cankers have killed a large number of trees in three campgrounds on the Carson National Forest, N. Mex.

Status of Insects

Douglas-fir beetle, Dendroctonus pseudotsugae Hopk. This beetle remained active in several northern Arizona locations. Prompt salvage logging in 2,000 acres of Douglas-fir blowdown helped avert an outbreak on the Kaibab National Forest, Ariz. Beetle populations on the Forest are now at low levels and should remain static. Moderate damage occurred on about 600 acres of the North Rim of Grand Canyon National Park.

Small areas of beetle-infested Douglas-fir trees were observed at other Arizona localities: below the Mogollon Rim near Payson; in the White Mountains on the Fort Apache Indian Reservation; on the Apache National Forest; and at Walnut Canyon National Monument.

In New Mexico, Douglas-fir beetle damage was confined to scattered pockets in the Chuska Mountains of the Navajo Indian Reservation and the Mogollon Mountains of the Gila National Forest.

Spruce beetle, Dendroctonus rufipennis (Kby.). Populations are at endemic levels throughout the Region. The recent 4-year epidemic on 50,000 acres of the Fort Apache Indian Reservation, Ariz., has declined to the point where little additional spruce mortality is expected. An impact evaluation of resource losses, created by this epidemic, is in progress.

Spruce beetle activity presently is confined to blowdown and logging slash at all other locations in Arizona and New Mexico. These areas are under surveillance to insure early detection of any potentially damaging populations.

Mountain pine beetle, Dendroctonus ponderosae Hopk. An infestation of this insect covered 2,500 acres on the Kaibab National Forest, near Jacob Lake, Ariz. An estimated 1,000 mature ponderosa pines were killed in 1972, and many newly attacked trees were found this year. A presuppression survey is underway to mark the newly infested trees for salvage logging. Successful containment of this potentially severe outbreak is anticipated in 1974.

Another infestation of the mountain pine beetle was detected on 1,200 acres of ponderosa pine on the Carson National Forest, south of Taos, N. Mex. Groups of sawtimber-sized trees, scattered throughout dense sapling stands, have been killed.

Roundheaded pine beetle, Dendroctonus adjunctus Blandf. This insect remained a problem on 150,000 acres of ponderosa pine type on the Lincoln National Forest and the Mescalero-Apache Indian Reservation, in south central New Mexico.

Ips beetles, Ips spp. Two species, Ips lecontei Sw., in south central Arizona, and Ips pini (Say), in other areas, continued to be a problem in ponderosa pine forests. Continuous forest disturbances were responsible for maintaining potentially epidemic populations in many areas. Two suppression projects on the Coconino National Forest, Ariz., successfully reduced ips populations in ponderosa pine pole stands. Top-killing of mature ponderosa pine also was evident in many areas of Arizona and New Mexico.

Large aspen tortrix, Choristoneura conflictana (Wlk.). Epidemic populations of this pest were found throughout aspen stands on the North Rim of Grand Canyon National Park and the adjacent Kaibab National Forest in northern Arizona. The very heavy aspen defoliation, expected in 1974, is likely to affect aesthetic values along Grand Canyon Highway.

Western spruce budworm, Choristoneura occidentalis Free. Populations were endemic to light throughout most of the Region. Populations show increasing trends on State and private lands east of Eagle Nest in northern New Mexico, and the Kaibab National Forest and Grand Canyon National Park in northern Arizona. In these areas, light to moderate defoliation is expected on 65,000 acres in 1974.

Western tent caterpillar, Malacosoma californicum (Pack.). An infestation of this insect remained active on 8,000 acres of aspen in northern New Mexico. Defoliation was again heavy on private land in 1973, but decreased on the Carson National Forest. Repeated heavy defoliation since 1971 has caused scattered tree and branch mortality.

White-fir needle miner, Epinotia meritana Hein. For the second successive year, this insect has defoliated white fir on an estimated 10,000 acres of the Apache National Forest, near Alpine, Ariz. Data from permanent plots indicated defoliation has caused top-kill and tree mortality within the infested area.

Pinyon needle scale, Matsucoccus acalyptus Herb. This insect continued to be a problem throughout the Region where the pinyon type occurs in urban and recreation areas. Scale damage, characterized by yellowing foliage, reduced needle length and premature needle loss, primarily affects aesthetic values. Trees may be killed by repeated scale feeding.

A cooperative study between the Region and the Rocky Mountain Forest and Range Experiment Station tested a cultural procedure for suppressing this pest. Eggs were washed from host trees with a garden hose. Dislodged eggs, litter, and debris were raked, bagged, and destroyed. The procedure is simple, inexpensive, and offers an effective cultural control alternative to chemical pesticides.

Other insects. Several Dendroctonus spp. showed increased activity. The western pine beetle, Dendroctonus brevicomis LeC., was found attacking ponderosa pines in the Prescott, Ariz., area. Chihuahua pine mortality from the southern pine beetle, D. frontalis Zimm., was observed in the Santa Catalina Mountains north of Tucson, Ariz., and in other southern Arizona mountains. D. valens LeC., the red turpentine beetle, killed ponderosa pines at scattered localities in the central Arizona mountains.

The Douglas-fir tussock moth, Hemerocampa pseudotsugata McD., continued to damage ornamental blue spruce and white fir trees in Los Alamos and Santa Fe, N. Mex., but remained endemic elsewhere in the Region. Damage from needle-mining moths, Coleotechnites spp., was noticeable on ponderosa pine trees near McNary and Show Low, Ariz., and on pinyon pines near Aztec and Tres Piedras, N. Mex. Pinyon pine is a new host record for this genus, and the moth causing the damage is an undescribed species. Southwestern pine tip moth, Rhyacionia neomexicana (Dyar), populations caused moderate damage, but remained static on 100,000 acres of the Sitgreaves National Forest, Ariz. The tiger moth, Halisidota ingens Hy Edws., was abundant in the Gallinas Mountains of central New Mexico, but caused only light damage to scattered ponderosa pines. Prescott scale, Matsucoccus vexillorum Morr., remained active on ponderosa pine regeneration in New Mexico. It was found on the Lincoln National Forest, apparently for the first time. This extends the known range of this pest into southern New Mexico.

Status of Diseases

Dwarf mistletoes, Arceuthobium spp. Dwarf mistletoes are the most destructive disease-causing agents in the forests of the Southwest. Nine dwarf mistletoes occur in the Region. Of these, Southwestern dwarf mistletoe, Arceuthobium vaginatum subsp. cryptopodum (Engelm.) Hawks. and Wiens, on ponderosa and Apache pines, is the most important. Annual losses caused by A. vaginatum subsp. cryptopodum may exceed 150 million board feet. Douglas-fir dwarf mistletoe, A. douglasii Engelm., on Douglas-fir, is next in importance. The other seven dwarf mistletoes in the Region are only of local importance.

One of the locally important species is western spruce dwarf mistletoe, A. microcarpum (Engelm.) Hawks. and Wiens. In 1973, the incidence of this dwarf mistletoe was recorded during a spruce beetle survey on the Fort Apache Indian Reservation, Ariz. It occurred on 4 percent of 2,200 plots taken over 20,000 acres of Engelmann spruce.

In 1973, dwarf mistletoe preventive measures received increased emphasis in the management of timber stands. These measures, which were applied on 50,000 acres during the year, included removal of residual infected trees from regeneration areas and harvest of poor-risk, infected trees.

An economic evaluation of dwarf mistletoe control practices in ponderosa pine is being conducted in cooperation with the Rocky Mountain Forest and Range Experiment Station. The study will be completed in early 1974.

Air pollution. Surveys for air pollution injury to forest vegetation continued in 1973. In Arizona, symptoms of sulfur dioxide injury were observed for the second successive year at one location on the Apache National Forest and at a second location on the Tonto National Forest. The injury was confined to deciduous trees and understory vegetation. No tree mortality has been observed in the affected areas. In anticipation of possible increased emissions from a source near Holbrook, Ariz., the vegetation at Petrified Forest National Park was surveyed for air pollution injury.

A cooperative effort began at the University of Arizona in 1972 to study the relative susceptibility of several native tree species to sulfur dioxide injury. The study will be completed in 1975.

Aspen cankers. Canker diseases have killed a large number of aspen in three campgrounds on the Carson National Forest, N. Mex. A survey, conducted in cooperation with the Rocky Mountain Forest and Range Experiment Station, indicated that Cenangium canker, Cenangium singulare (Rehm.) Davidson and Cash, was the most serious disease in the campgrounds. This disease was frequently found near picnic tables in trees that had been wounded with axes or knives. Other canker diseases present in the campgrounds included Hypoxylon canker, Hypoxylon mammatum (Wahl.) Miller, and Cytospora canker, Cytospora chrysosperma (Pers.) Fr.

Rusts. Limb rust, Peridermium filamentosum Pk., continued to cause some mortality in ponderosa pine. Spruce broom rust, Chrysomyxa arctostaphyli Diet., and fir broom rust, Melampsorella caryophyllacearum Schroet., are important in several recreation areas where they are associated with bole deformation, spiketop, and mortality. Land managers are encouraged to reduce losses by removing poor-risk trees during normal intermediate cuttings.

Needle cast. Needle cast of ponderosa pine was at an endemic level in 1973. The three needle cast fungi, which have been associated with widespread damage in the past, are Elytroderma deformans (Weir) Dark., Davisomycella ponderosae (Staley) Dublin, and Lophodermella cerina (Dark.) Dark.

REMEMBER - PEST DETECTION IS FOR YOUR PROTECTION

Be alert! Please report promptly any new or unusual forest insect or disease outbreaks to the Forest Service, Branch of Forest Insect and Disease Management. Information concerning forest pest problems can most easily be reported on the Detection Report Form (R-3 5200-5). A sample of this Detection Report Form is shown on page 13. If you need additional information or forms, please write or give us a call at (505) 766-2440.

USDA—Forest Service

DETECTION REPORT

FOREST INSECT AND DISEASE DAMAGE

PEST DETECTION IS FOR YOUR PROTECTION

Be alert. Report promptly any new or unusual forest pest to the Regional Forester (See FSM 5220).

Pest Control Branch USFS

INSTRUCTIONS: After detection of any insect or disease activity, do the following:

(a) Immediately prepare detection report in triplicate.
(b) Send all three copies to the Regional Forester, Forest Service, USDA, 517 Gold Avenue, S.W., Albuquerque, New Mexico 87101.
(c) Pest Control will acknowledge, answer, and return your file copies.

Administrative Unit _____ (Forest, National Park, etc.)

Sub-Unit _____ (Ranger District, etc.)

Date of Observation _____

Observed by _____

Location of Damage (Attach ¼" scale map)

_____

_____

GENERAL INFORMATION

Host _____ Avg. d.b.h. _____

Size class affected:

- ☐ Seedlings
- ☐ Saplings
- ☐ Poles
- ☐ Sawtimber
- ☐ Overmature timber

Damaged standing stems/acre _____

Down stems/acre _____ (Blowdown, slash, cull, etc.)

Number of acres infested _____

Damage to:

- ☐ Single Trees
- ☐ Groups _____ (No. of) _____ (No. per)

TREE DAMAGE SYMPTOMS—(Check term(s) applicable)

Crown:
- ☐ Top
- ☐ Middle
- ☐ Lower
- ☐ Entire

Needles or leaves:
- ☐ Chewed
- ☐ Mined
- ☐ Webbed
- ☐ Spotted
- ☐ Discolored
- ☐ Missing

Tree foliage:
- ☐ Green
- ☐ Fading
- ☐ Sorrel
- ☐ Red
- ☐ Brown
- ☐ Black

Enclosures:
- ▱ Appropriate Maps
- ▱ Damage Samples
- ▱ Insect Specimens

Damage to:
- ☐ New Foliage
- ☐ Old Foliage
- ☐ Both

Tree bole:
- ☐ Cracked
- ☐ Sluffed bark
- ☐ Boring dust
- ☐ Pitch tubes
- ☐ Woodpecker feeding
- ☐ Canker
- ☐ Conks

Branches:
- ☐ Broken
- ☐ Swollen
- ☐ Discolored
- ☐ Cankers
- ☐ Mistletoe
- ☐ Girdled

Associated disturbance:
- ☐ Fire
- ☐ Logging
- ☐ Thinning
- ☐ Blowdown
- ☐ Insects
- ☐ Disease

Unusual weather conditions:
- ☐ Wind
- ☐ Rain
- ☐ Hail
- ☐ Sleet
- ☐ Snow
- ☐ Flood
- ☐ Drought

INFESTATION OR INFECTION CHARACTERISTICS

Insect(s) or Disease(s) if known _____ How long active _____

Status: Static _____ Decreasing _____ Increasing _____ Unknown _____

Remarks: _____

(FOR PEST CONTROL BRANCH USE ONLY)

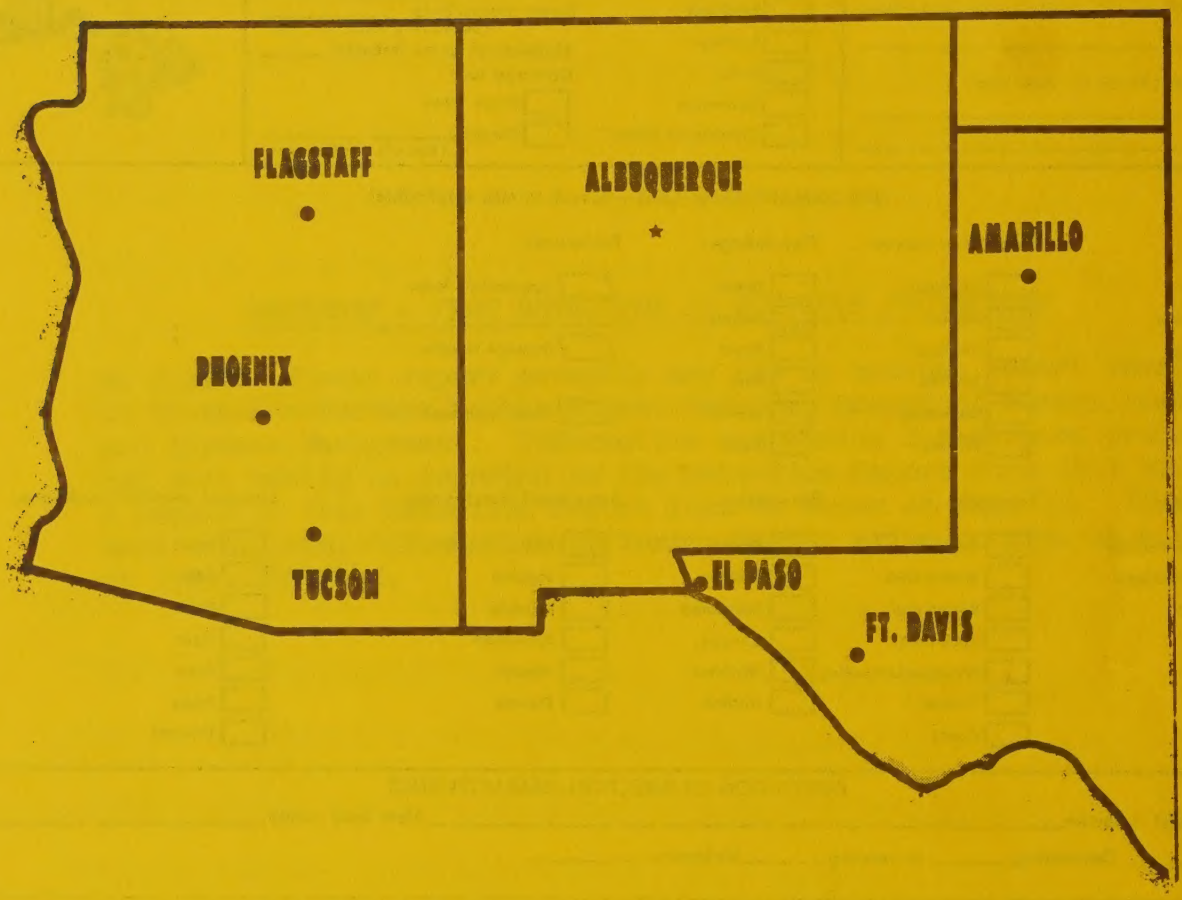
Remarks:

Unisort Cards By _____ Date _____ Acknowledged By _____

R-3 5200-5 (Rev. 1/69)

FOREST INSECT AND DISEASE MANAGEMENT

ARIZONA, NEW MEXICO, W. OKLAHOMA AND W. TEXAS



U.S. DEPARTMENT OF AGRICULTURE, FOREST SERVICE, SOUTHWESTERN REGION

Additional information concerning this report or other forest insect and disease problems can be obtained by contacting the Forest Insect and Disease Management Branch listed below.

USDA, Forest Service
Division of Timber Management
Branch of Forest Insect and Disease Management
517 Gold Avenue, SW
Albuquerque, New Mexico 87102

Telephone: (505) 766-2440